Fork System Call In Operating system

The **fork() system call** is used in Unix/Linux-based operating systems to create a new process. The new process created is called the child process, and the existing process is called the parent process.

How fork() Works

1. Parent process calls fork()
2. OS creates a child process (a duplicate of the parent)
3. Both processes continue execution from the next instruction after fork()
4. Different return values for parent and child:

- Parent receives child's Process ID (PID) some +ve value
- Child receives 0
- If fork() fails, it returns -1

total number of processes for n fork calls (includes both the parent and child processes) = 2^n

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```c
#include <stdio.h>
#include <unistd.h>

int main() {
    fork();
    fork();
    printf("Process (PID: %d)\n", getpid());
    return 0;
}
```

Output:

Process (PID: 1234)
Process (PID: 1235)
Process (PID: 1236)
Process (PID: 1237)